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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/666,102

09/18/2003

Stephen J. Fink

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10/11/2006

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EXAMINER

WANG, RONGFA PHILIP

ART UNIT

PAPER NUMBER

2191

DATE MAILED: 10/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/666,102

Applicant(s)

FINK ET AL.

Examiner

Philip Wang

Art Unit

2191

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/21/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

***Detail Action***

1. This office action is in response to the application filed on 9/18/2003.
2. Claims 1-30 are pending.

***Preliminary Amendment***

3. Preliminary amendment filed on 3/18/2004 is entered per applicant's request.

***Objection***

***Specification***

4. The specification of the disclosure is objected to because the first paragraph of page 2 appears to be redundant. Correction is required. See MPEP § 608.01(b).

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. It appears that the core of the invention is related to garbage collection to reclaim memory in a computer system. It is suggested to change the title of the invention to properly match the core of the invention.

***Drawings***

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the label for method 100 as shown, for example, on page 5, second line and page 6, first line, must be shown or the feature(s) canceled from the claim(s). Also, label 214, for decision on page 7; line 6 is not shown in the drawing. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 5, 13, 22, and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The examiner believes that nowhere in the specification provides any description for such limitation. No prior art rejection will be provided for these claims.

8. Claims 9, 10, 11, 12, and 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The only location in the specification that mentions these limitation is in paragraph [0018] that only list these functions without providing any detail regarding how these functions are performed. No prior rejections will be provided for these claims.

9. Claims 1-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1, 16, and 23 recite the limitation of an activation. Though the specification describes step 110 "the system associates a phase with an activation", however, it appears no description is given regarding what is an activation. Based on the examiner's understanding, an activation count is associated with a frame (per [0017], line 7-8). All depend claims of claims 1, 16, and 23 suffer the same deficiency as claims 1, 16, and 23 and are rejected for the same reason above.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Independent claims 1 and 16 recite the limitation of detecting phases in a computer program, however, the body of the claim does not include any limitation for detecting phases in a computer program. All depend claims of claims 1 and 16 suffer the same deficiency and are rejected for the same reason above.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-4, 6-8, 12, 14-21, 23-25, and 27-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Houldsworth (US Patent No. 6,557,091).

As per claim 1,

Houldsworth discloses

a) allocating space in memory for an activation count for each frame (FIG. 5, HT/COUNT is memory allocated);

b) zeroing the activation count wherever the program creates a new stack frame (It is inherent when it is initialized, see for example FIG. 4 HT/COUNT, left col.);

c) analyzing the stack for each thread and incrementing the activation count for each frame (FIG. 5, HT/COUNT shows and count of 2 after incrementing.); and

d) associating a phase with an activation whose activation count is non-zero (FIG. 5, an SF is associated with a phase with a count of 2 which is non-zero).

As per claim 2,

the rejection of claim 1 is incorporated;  
further Houldsworth discloses

- step c) further comprises logging activation counts during each interval  
(c3: 27-28, "...periodically determining...").

As per claim 3,  
the rejection of claim 1 is incorporated;  
further Houldsworth discloses

- the activation count is implemented by reserving storage in each stack  
frame (c6: 35-36, "...a specific table TT for each  
thread...").

As per claim 4,  
the rejection of claim 1 is incorporated;  
further Houldsworth discloses

- performing step performing step c) at periodic intervals of time according  
to a system clock (c3: 27-28, "...periodically determining...").



As per claim 6,

the rejection of claim 1 is incorporated;

Houldsworth discloses

- comprising ensuring that when a phase ends, an action is performed immediately (c7: 49-51, "...As local garbage is collected at procedure exits...").

As per claim 7,

the rejection of claim 6 is incorporated;

further Houldsworth discloses

- changing the return address to force the program to call a designated procedure when the frame returns c7: 49-51, "...As local garbage is collected at procedure exits...").

As per claim 8,

the rejection of claim 1 is incorporated;

further Houldsworth discloses

- scheduling garbage collection after each associated phase (c2: 23-25, "...singly referenced objects may be garbage collected...").

As per claim 12,

the rejection of claim 1 is incorporated;

Houldsworth discloses

- further comprising resetting profile data at program phase transitions (c2: 29-31, "...global flag set by...").

As per claim 14,

the rejection of claim 1 is incorporated;

Houldsworth discloses

- implementing activation counts in a side data structure (Fig. 6, where HT/COUNT is a side data structure.).

As per claim 15,

the rejection of claim 1 is incorporated;

Houldsworth discloses

- the activation count is implemented as an array paralleling the stack (c7, 11-13, "...could be held in an array...").

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Claims 16-21 are system claims that recite the same limitation as claims 1-4, and 7 and are rejected for the same reasons above.

Claims 23-25, 27-29 computer readable medium claims recite the same limitation as claims 1-3, and 7-8 and are rejected for the same reasons above.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

It is noted that any citation **[[s]]** to specific, pages, columns, lines, or figures in the prior art references and any interpretation of the references should not be considered to be limiting in any way. A reference is relevant for all it contains and may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. **[[See, MPEP 2123]]**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Wang whose telephone number is 571-272-5934. The examiner can normally be reached on Mon - Fri 8:00AM - 4:00PM. Any inquiry of general nature or relating to the status of this application should be directed to the TC2100 Group receptionist: 571-272-2100.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Zhen can be reached on 571-272-3745 per claim 08, The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



WEI ZHEN  
SUPERVISORY PATENT EXAMINER